

crustaceans were corrected for the total area swept by the two trawls using the formula described by Krebs (1972).

Fish tissue samples for contaminant analyses were obtained from trawls. Targeted species included spot (*Leiostomus xanthurus*) and Atlantic croaker (*Micropogonias undulatus*). Silver perch (*Bairdiella chrysoura*) or weakfish (*Cynoscion regalis*) were collected if they were present when the target species were not. All fish samples were wrapped in foil and stored on ice in plastic bags until they could be frozen in the laboratory. Entire fish were then rinsed and homogenized in a stainless steel blender. Extraction and analytical procedures were similar to those described for sediments.

## 2.4. Habitat Evaluation

Observations were made at each site prior to departure to document the presence of litter (within the limits of the trawled area) and to note the proximity of the site to urban/suburban development or industrial development.

## 2.5. Quality Assurance

SCECAP protocols include rigorous quality assurance and quality control guidelines for all aspects of the program to ensure that the database is of high quality. A copy of the Quality Assurance Project Plan is maintained at the SCDNR Marine Resources Research Institute and has been approved by the USEPA NCA Program.

## 2.6. Data Analyses

Comparisons of most water quality, sediment quality and biological measures were completed using standard parametric tests or non-parametric tests where the values could not be transformed to meet parametric test assumptions. Two stations (RO046286 and RT042266) were not included in the comparisons, since these sites represented special study sites selected to add stations in the Charleston Harbor estuary. Comparisons of measurements collected in tidal creek versus open water habitats were conducted using a t-test or non-parametric Mann-Whitney U test. Comparisons involving more than two station

groups or multiple years were generally completed using ANOVA or Kruskal-Wallis tests. Data from 2003 and 2004 were generally pooled within each habitat type to calculate the current condition of and temporal trends in most individual measures. Data from the two years were separated within each habitat type to examine changes in integrated water quality and sediment quality scores, benthic biological condition and overall habitat quality as well as for several individual measures of particular concern.

Use of the probability-based sampling design provided an opportunity to statistically estimate, with confidence limits, the proportion of South Carolina's overall creek and open water habitat that falls within ranges of values that were selected based either on (1) state water quality criteria, (2) historical measurements collected by SCDHEC from 1993-1997 in the state's larger open water bodies (SCDHEC, 1998a), or (3) other thresholds indicative of stress based on sediment chemistry or biological condition (Hyland *et al.*, 1999; Van Dolah *et al.*, 1999). These estimates were obtained through analysis of the cumulative distribution function (CDF) using procedures described by Diaz-Ramos *et al.* (1996).

# 3. RESULTS AND DISCUSSION

Data obtained from the 2003-2004 survey are summarized in the following sections. More extensive data summaries are also available on the SCECAP web site (<http://www.dnr.sc.gov/marine/scecap/>) and are referenced in this report as "data online."

## 3.1. Station Array

The locations of the 60 sites sampled in 2003 and 2004 are provided in Figures 3.1.1 - 3.1.4 and Appendix 1. Tidal creek station numbers are designated by RT, and open water stations are designated by RO. As noted previously, the two supplemental sites sampled in 2004 to obtain additional data for the Charleston Harbor estuary (RO046286 and RT042266) are not included in the general analyses of state-wide condition, but the data are available online.

The average depth of open water sites sampled during the two-year period was 5.2 m and varied from approximately 1.2-14.0 m (Appendix 1, data online).